Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matters of	)	
	)	
IP-Enabled Services	)	
	)	
E911 Requirements for IP-Enabled Service Providers	)	WC Docket No. 05-196

INTRODUCTION

The *Federal Communications Commission* ("FCC") released a *Notice of Proposed Rulemaking* ("NPRM") on June 3, 2005 seeking comment on the various issues concerning the "deployment throughout the United States of a seamless, ubiquitous and reliable end-to-end infrastructure for public safety".[1] Previously, in the *Vonage Order*[2], the Commission determined that it has the obligation to decide whether any regulations should apply to IP-enabled voice services, such as Vonage's interconnected Voice over Internet Protocol ("VoIP") service. In its *IP-Enabled Services* and *E911 Requirements for IP-Enabled Services* proceedings[3], the Commission makes clear that

[1] *Wireless Communications and Public Safety Act of 1999*, Pub. L. No. 106-81, 113 Stat. 1286 §2(b) (1999) (911 Act).
[2] *See Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission*, WC Docket No. 03-211, Memorandum Opinion and Order, 19 FCC Rcd 22404-22405, para. 2 (2004) (*Vonage Order*), *appeal pending*.
[3] *See IP-Enabled Services,* WC Docket No. 04-36, Notice of Proposed Rulemaking, 19 FCC Rcd 4863, 4864, para. 1 n.1 (2004).

certain regulatory obligations will apply to providers of such services, imposing E911 obligations on all interconnected VoIP providers in furtherance of the Commission's policy objective "to promote safety of life and property".[4]

The Commission recognizes that IP-enabled services is the latest "new frontier" of our nation's telecommunications landscape and that this new frontier is allowing new entrants to bring IP-enabled services to the communications marketplace. The Commission remains committed to fostering competition through its policy of allowing these services to evolve without undue regulation. But at the same time the Commission states that 911 service is critical to our nation's ability to respond to a host of crises and, recognizing the fact that consumers expect any voice service to provide the same access to 911 as traditional wireline telephone services do, the Commission adopted the E911 requirement for interconnected VoIP services as much to promote public safety as to allow VoIP services the ability to pose even greater competition to traditional wireline or wireless voice services.

So, the Commission takes the view that while a VoIP service provider enjoys the opportunity to introduce new and exciting public interest benefits to the communications marketplace, such an opportunity brings with it the responsibility to ensure that public safety is adequately protected[5]; in fact,

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[4] *See* 47 U.S.C. §151

[5] *See IP-Enabled Services, E-911 Requirements for IP-Enabled Service Providers*, WC Docket No. 05-196, Notice of Proposed Rulemaking, 20 FCC Rcd. 10245 (rel. June 3, 2005) at para. 56.

failure to protect the safety of their customers would produce the anti-competitive effect of deterring consumers from entering the new frontier of interconnected VoIP services.

The Commission's goals are two-fold: first, to protect the safety of users of VoIP services, and, second, to foster competition or not frustrate competition (as consistent with the *Telecommunications Act of 1996*). With these goals in mind, this comment letter responds to the Commission's request for comments on:

(1) whether the Commission needs to adopt regulations in addition to those imposed by the *VoIP E911 Order* to ensure that interconnected VoIP service customers obtain the required level of E911 services?

(2) what additional steps the Commission should take to ensure that providers of VoIP services that interconnect with the nation's PSTN provide ubiquitous and reliable E911 service?

In response to these issues, this comment letter will quickly address the background of the *VoIP E911 Order* and provide a short discussion of the mandates in the Order, but the greater part of this comment letter will concentrate on why VoIP providers are having trouble complying with the mandates in the Order (responding "yes" to the first request for comment above) and what steps the Commission might take to alleviate these troubles (in response to the second request for comment above).

TABLE OF CONTENTS

Before the

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In the Matters of	)	
	)	
IP-Enabled Services	)	
	)	
E911 Requirements for IP-Enabled Service Providers	)	WC Docket No. 05-196

I. Background of the *VoIP E911 Order*: VoIP Technology and Its Failures

VoIP promises to upend a century-old model of voice telephony, and while the transformation of the telecommunications industry toward VoIP is in its very early stages, it will eventually impact all sectors of the industry, including incumbent local exchange carriers, wireless service providers, cable providers and emergency service providers. In recognition of this impending transformation, the Commission should be applauded for taking a hard line[6] in seeking to ensure that social policy concerns, like protecting public safety, will be addressed in this very different technological environment.

VoIP is a much more "variable" service than traditional Public Switched Telephone Network-based ("PSTN") telephony. New combinations of technology are emerging in which methods of initiating and terminating calls, methods of integration with other messaging technologies and types of

[6] *See IP-Enabled Services, E-911 Requirements for IP-Enabled Service Providers*, WC Docket No. 05-196, Notice of Proposed Rulemaking, 20 FCC Rcd. 10245 (rel. June 3, 2005) p.22 (rules effective as of 120 days from the date of the Order).

equipment (phones, PCs, etc.) have become heterogeneous.[7] VoIP services may run on IP networks over many different types of wired or wireless access, for example, VoIP is increasingly carried over Wi-Fi wireless local access networks.[8] Nevertheless, millions of customers subscribe to a VoIP service as a substitute for traditional PSTN-based telephone service. The number of U.S. VoIP customers is likely to rise from 750,000 to about 9 million by 2008.[9] However, in 2004 there were many VoIP providers that did not provide their customers with any access to 911 emergency services, and those that did (and do currently) offer access to traditional 911 did not enable the VoIP provider to locate its customers automatically, so did (and do) not provide Enhanced-911 ("E911") like wireline and wireless providers.

The mandates in the *Order* were the result of the Commission's recognizing that VoIP services did not comply with the modern expectation that any voice technology or service provider will allow you to reach a 911 dispatcher and that dispatcher can identify your location even if you are unable to describe it. The Commission should be commended for its prompt response to several well-publicized incidents[10] where VoIP users were unable to reach 911 in an emergency and for its recognition that "Congress' mandate

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[7] A Model For Emergency Service of VoIP Through Certification and Labeling, 58 Federal Communications Law Journal 115, 143 (2005); (See generally, Aaron Futch & Christine Soares, Enhanced 911 Technology and Privacy Concerns: How Has the Balance Changed Since September 11 2001?, Duke L. & Tech. Rev. 38 (2001) (describing the basic principles of E911 functionality).

[8] *Id.*

[9] *Net-based 911 fight puts lives on line*, Paul Davidson, USA Today, see: http://www.usatoday.com/tech/news/2005-02-28-voip-usat_x.htm (last updated 3/1/2005).

[10] See supra note 4.

that the Commission promote the 'safety of life and property' transcends new technologies and cannot be compromised".[11]

II. Mandates of the *VoIP E911 Order*

The mandate applies to "interconnected" VoIP services which can be used to receive calls that originate on the PSTN and to terminate calls to the PSTN.

Specifically, the *Order* requires that: (1) Interconnected VoIP providers must deliver all 911 calls to the customer's local emergency operator. This must be a standard, rather than optional, feature of the service.

(2) Interconnected VoIP providers must provide emergency operators with the call back number and location information of their customers (i.e., E911). Although the customer must provide the location information, the VoIP provider must provide the customer with means of updating this information, whether he or she is at home or away from home.

(3) By the effective date, interconnected VoIP providers must inform their customers, both new and existing, of the E911 capabilities and limitation of their service.

(4) The incumbent Local Exchange Carriers ("LECs") are required to continue to provide access to their E911 networks to any requesting

[11] Statement of Chairman Kevin J. Martin, *See IP-Enabled Services, E-911 Requirements for IP-Enabled Service Providers*, WC Docket No. 05-196, Notice of Proposed Rulemaking, 20 FCC Rcd. 10245 (rel. June 3, 2005) at p.85.

telecommunications carrier. They must continue to provide access to trunks, selective routers, and E911 databases (containing user call-back and location information) to competing carriers. The Commission will closely monitor this obligation.

Significantly, the Commission declined to exempt providers of interconnected VoIP services from liability under state law related to their E911 services. Furthermore, The Enforcement Bureau's Public Notice states that it "expects that such providers will discontinue marketing VoIP service, and accepting new customers for their service" in areas where they are not in full compliance with the Commission's rules."[12] While the Enforcement Bureau is not requiring providers to disconnect current customers, the rule[13] remains in effect and the Bureau has made no commitment not to pursue enforcement of the rule against providers that continue to market and provide such service.

III. Why VoIP Providers Are Having Trouble: Problems and Potential Solutions

1. It's hard to cooperate with competitors, especially ones with liability.

An important aspect of VoIP's creating competition for traditional telephony and wireless is that IP phones do not need to associate with a local central office. However, the *E911 VoIP Order* requires association and

[12] Enforcement Bureau Outlines Requirements of November 28, 2005 Interconnected Voice Over Internet Protocol 911 Compliance Letters, WC Docket No. 04-36, WC Docket No. 05-196, DA 05-2945, at 5 (rel. Nov. 7, 2005).
[13] See Commission Rule 9.5

cooperation between VoIP providers and LECs to fulfill the Commission's policy objectives of creating a seamless E911 infrastructure incorporating all voice communication technologies as well as fostering competition in the industry.

Although the *E911 VoIP* Order requires LECs to cooperate, nevertheless VoIP service providers almost unanimously have petitioned for waivers from certain requirements (those which require cooperation) and cited "circumstances beyond control" of such providers for their failure to fully comply.[14] In most of the petitions, VoIP service providers point out that it would be impossible for them to contact, negotiate and contract with all of the necessary parties, so they have contracted with third party providers, such as Intrado, who in turn contract with LECs, Public Safety Answering Points[15] ("PSAP") and enlist the cooperation of certain states.[16] So, the VoIP provider is limited by the pace of the third party's roll-out of its E911 solution and that third party is itself limited by the extent of cooperation it receives from LECs, PSAPs and state or local governments.

Essentially, the problem is this: existing VoIP providers complain that their failure to implement a ubiquitous, end-to-end E911 solution is due to lack of cooperation by the LECs, and the consequence of the Commission's

[14] See, for example, Petition for waiver from CAN Digital Phone Service LLS, requesting a nine month time extension with which to comply.
[15] Public safety answering points are E911 call centers that are run by municipalities or states.
[16] Many petitions note that Hawaii and California are particularly problematic. In its petition for waiver, AccessLine reports that Arizona, Connecticut, Delaware, Maine, Massachusetts, Tennessee, and Vermont are imposing additional testing requirement, which will further delay the roll-out of the E911 solution.

rules against marketing for and accepting new customers in areas where E911 service is not fully compliant is that LECs have the power to prevent customers from switching from traditional telephony to VoIP service in certain areas. By denying VoIP providers access to their E911 network in a certain area, LECs can prevent a VoIP provider who wishes to remain in strict compliance with the rules from accepting new customers in that area, thus preventing competition. Although the Commission stated that it would closely monitor the LEC's obligation to provide any requesting telecommunications carrier access to their E911 networks, the petitions for waiver nonetheless claim that third party E911 providers are having difficulty obtaining cooperation in their efforts to contract with LECs and PSAPs.

In its petition for waiver, Vonage stated it "has experienced three main obstacles" in providing E911 service, but for which Vonage insists its network "is fully prepared to handle and process E911 calls".[17] The obstacles are: (1) unavailability of or delay in obtaining access to databases containing user's call-back number and location (2) ILECs posing "significant delays" in other technical respects (eg. lack of access to selective routers via the PSTN) and (3) PSAPs' lack of readiness to access VoIP calls or data from VoIP users.[18]

[17] Vonage Petition, WC Docket No. 05-196, at 2 & 4.
[18] In one of its Comments, Vonage states that "unlike the experience of wireless E911 where PSAPs affirmatively request E911 data when they are capable of receiving it, VoIP providers are sending E911 data without any request from PSAPs…creat[ing] logistical challenges." See, Comment from Vonage, WC Docket No. 05-195, at 1 (filed January 26, 2006).

But LECs vigorously deny allegations of lack of cooperation on their part. For example, in its reply to Vonage's petition for waiver, Bell South states that it "cannot let go unanswered Vonage's accusations that BellSouth, among others, is to blame for Vonage's failure to comply with [the Commission's] requirements. While the provision of E911 service is a cooperative effort…ensuring that Vonage's customers can reach an emergency operator in the even of a crisis is ultimately Vonage's responsibility. For too long, Vonage has attempted to shirk this responsibility by pointing fingers at or seeking to blame others for its failure to provide E911 services to its customers".[19]

If LECs have failed to fully cooperate it is not without good reason. First, in certain areas, PSAPs are being advised to decline, and actually declining, entering into agreements with VoIP providers due to lack of legislation protecting VoIP providers and PSAPs from any liability that could result from mistakes in routing or handling of 911 calls. Second, VoIP providers are enjoying a "free ride", in a sense, because their services are not subject to state taxes imposed on other telecommunications services to support the E911 PSAPs. Both of these factors make negotiations between the third party E911 solution provider and the LECs and PSAPs easier said than done.

The liability issue poses extraordinary problems for wireless VoIP providers. Not only must a nomadic service provider contract with and

[19] Bell South Reply to Vonage Petition, WC Docket No. 05-196, at 1.

obtain connections to all 600 Selective Routers and the approximately 6,000 PSAPs, and integration with all the databases necessary to hold users call back and location information ("ALI databases"), but the liability issue is compounded for a nomadic service provider. Fixed and nomadic VoIP service providers are both subject to liability, to which wireless and wireline providers are not subjected, for misrouting of calls based on the problems inherent in asking a user to identify his Registered Location, as opposed to having it automatically identified, e.g. typing errors and ambiguities, that is multiple names for the same location (street or community). Intrado reported in its Comment that the Registered Locations as entered by VoIP users failed, for either or both the reasons above, at a rate of 51.5%. So, 51.5% of the time, a live 911 call would not have been routed to the correct PSAPs and the PSAP's call dispatching system would have failed to receive any data during the call.

Only the nomadic service provider, however, is subject to increased liability because there is currently no requirement that VoIP providers impose a mechanism to allow automatic location of nomadic users. While the Commission requires even nomadic users to provide their "Registered Location" information, if a user of a wireless device moves around and calls 911 before updating his Registered Location, there is no way to locate the user other than to rely on the user's ability to verbally describe his location. Also, as several petitions for waiver point out, it is not feasible to associate

multiple Registered Locations with the VoIP service, and even if that were possible there would be no means to automatically recognize remote use as opposed to use at the primary registered location.

But if existing VoIP providers are having trouble fully complying with the Commission's requirements, and are concerned about their ability to attract new customers, what about potential new entrants to the market? The Commission mentions that full compliance with its rules will be very difficult for smaller VoIP providers, but never mentions the effect of these rules on new entrants to the market. Without additional rules in place to ensure all voice providers access to the E911 network, not only will existing VoIP service providers (small and large) continue to be frustrated in their efforts to cooperate with LECs, thus allowing LECs to discourage the competition posed by this new technology (not to mention delaying implementation of an end-to-end E911 network), but new entrants could be denied entry to the market altogether, thus not only discouraging present competition but preventing future competition altogether.

So, the Commission's refusal to grant VoIP providers the same protection from liability as wireline and wireless carriers currently enjoy has the effect of hampering competition. VoIP providers' ability to compete with ILECs, CLECs and wireless companies results in more service choices and better prices for those services. The Commission, as well as Congress, has

long recognized that the public benefits from competitive forces that increase choice and bring better prices to consumers.

If VoIP providers enjoyed liability protection, LECs and PSAPs would no longer have any legitimate motive to delay negotiations and deny VoIP providers access to their E911 networks. Then VoIP providers would not fear restrictions on their ability to market to and accept new customers. It is inconsistent with the objectives of the Communications Act and the *E911 Order* to enforce restrictions on marketing to and accepting new customers when VoIP providers are under such restrictions only as an indirect effect of their lack of protection from liability and when such restrictions would have no effect but to deny customers the opportunity to obtain competitive VoIP service.

2. The Commission should encourage competition by extending liability protection to VoIP providers and resolving location problems for nomadic providers.

If the Commission extended liability protection to VoIP providers and required VoIP providers to impose some mechanism to allow automatic location of nomadic VoIP users, then LECs and PSAPs would no longer have any legitimate grounds to hesitate to contract with VoIP, especially nomadic VoIP, service providers. This solution would further the Commission's goals in two ways: first, extending liability and resolving automatic location

problems would allow for a speedier implementation of a seamless and ubiquitous E911 network, and, second, would spur the competition posed to wireline and wireless voice services by VoIP technology.

The Commission could resolve the liability issue as to fixed VoIP service providers by requiring all Registered Location information, as entered by the user, to be validated through a Master Street Address Guide ("MSAG") to ensure that the calls are routed to the correct PSAP and that appropriate details of the caller's information is displayed.[20] Such validation would have the simultaneous effects of ensuring that Registered Location information is accurate and usable and of alleviating LECs' and PSAPs' concerns of increased liability on account of users' errors.

The same liability problem for nomadic users can only be solved by requiring some mechanism by which to automatically locate such users. (The Commission should require an automatic location mechanism for nomadic service providers, but such a requirement is not necessary for the provision of fixed VoIP services.) Suggestions of solutions for this problem are varied. Intrado suggests that the Commission should require that both the X,Y coordinates and the Registered Location of the user be passed to the PSAPs.[21] Other suggestions include using GPS, or using TV signal-based positioning. Of these two, Broadcast TV signal-based positioning seems better suited to resolving the problems faced by nomadic VoIP service providers since TV

[20] See Comments of Intrado Inc., WC Docket No. 05-196, at 2.
[21] *Id.*

signals are lower frequency than GPS signals, so are stronger indoors as compared to GPS which does not function reliably indoors at this point.[22]

3. The Commission should recognize the distinction between different types of VoIP technology and regulate them accordingly; the Commission should regulate VoIP technology in recognition of the impending transition from a PSTN- based network to a packet-switched IP-based network.

One overriding issue raised in the *E911 VoIP Order* is whether the Commission should regulate VoIP as it has regulated wireless or as it has regulated traditional wireline telephone service. The Commission's decisions thus far have focused on uses of VoIP technology that are more analogous to wire than wireless telephony. The requirement of a Registered Location and other rules in the *Order* indicate that the Commission has not reached any conclusion on how to deal with nomadic users who have no fixed locations, even temporarily.

The Commission should not treat all VoIP providers the same since fixed VoIP services do not have the same inherent issues with reliability of location information as portable VoIP services. In general, fixed VoIP services are more analogous to wireline telephony, and nomadic VoIP services are more analogous to wireless telephony. There is no reason to burden providers of fixed VoIP services with different location information

[22] See Ex Parte Comment from Rosum Corporation, WC Docket No. 05-196, at p. 7 (filed March 22, 2006).

requirements than those imposed on traditional telephony providers (and to do so would thwart competition by placing fixed VoIP providers at a regulatory disadvantage). Even within the realm of nomadic services, the Commission should draw a regulatory distinction between Wi-Fi based VoIP services, which are typically used within a few hundred feet of a wireline access point, and other wireless VoIP services (i.e., CMRS services) which operate at long distances from cell towers. No matter what regulations the Commission imposes, it should remain mindful of the important distinctions between technologies employed by various VoIP service offerings.

Furthermore, the many problems VoIP service providers are currently facing are caused, not only by the problems mentioned above, but also by the difficulty of engineering backward compatibility with a 911 architecture dating from the 1960's. The wireline technology used by PSAPs limits the amount of data that can be transferred between the LEC and the PSAP (typically limited to 8 or 10 digits) and imposes a delay of several seconds (seconds count during a live 911 call, so this delay is dangerous more than it is merely inconvenient). PSAPs still use low-speed modems to access databases holding callers' location and call back information. Back-fitting VoIP technology into the existing 911 network will delay a more robust and efficient IP-based 911 system. Perhaps the Commission should consider its current regulatory scheme as a temporary solution pending the development of an E911 infrastructure that is suitable for packet-based communications.

LECs and PSAPs must be upgraded to become broadband and IP-enabled. While such an upgrade is time consuming and costly, it would ultimately fulfill both of the Commission's objectives, allowing both an advanced "next-generation" 911 system which would better serve the Commission's policy to protect public safety and allowing for enhanced competition and all the benefits to consumers that greater competition brings.

Conclusion

The Commission has only begun to develop its regulatory VoIP strategy. In doing so the Commission should remain mindful of the dramatic differences between various VoIP technologies as well as the differences in VoIP's technological model and that of the PSTN-based network. An important lesson worth considering is that past regulations should not necessarily be used to define future policy. Rather than promote anti-competitive dealings between VoIP providers and LECs (by requiring back-fitting of VoIP technology into the PSTN-based network, failing to protect VoIP providers from liability and restricting their ability to market to and accept new customers), the Commission could simultaneously promote greater E911 efficiency and greater competition in the telephony market by requiring an upgrade of the PSTN-based network.